

Amendments to the Specification:

Please replace the paragraph on page 5, line 15, with the following redlined paragraph:

Figure 2A is an isometric view of the power module of Figure 1 with a cover removed and some portions broken or removed to show the DC bus, the AC bus, and the power semiconductor devices carried by a number of regions carried by a substrate.

Please replace the paragraph beginning on page 7, line 22, with the following redlined paragraph:

Figures 1, 2A, and 2B show a base power module 10, generally comprising: a lead frame or housing 12, an integrated cold plate 14 attached to the housing 12 via bushings 15, a DC bus 16, an AC bus 18; and power semiconductor devices 20 electrically coupled between the DC bus 16 and AC bus 18, forming a high side 20_{ba} and a low side 20_{ab} of the power module 10. The base power module 10 may further include one or more gate drivers 22 (Figure 9) for driving some of the power semiconductor devices 20.

Please replace the paragraph on page 8, line 3, with the following redlined paragraph:

Two sets of DC bus terminals 24, 26 extend out of the housing 12. As discussed in detail below, in some applications one set of DC bus terminals 26₄ is electrically coupled to a positive voltage or high side of a power source or load and the other set of DC bus terminals 24₆ is electrically coupled to a negative voltage or low side of the power source or load. In other applications, the DC bus terminals 24, 26 are electrically coupled to respective DC bus terminals 24, 26 on another power module. A set of AC phase terminals comprises three pairs of AC bus phase terminals 28a, 28b, 30a, 30b, 32a, 32b, extending out of the housing 12. As discussed in detail below, in some applications, one pair of AC phase terminals is coupled to a respective phase (A, B, C) of a three phase power source or load. In other applications, some of the AC phase terminals are interconnected across or between the pairs, and coupled to power sources or loads.

Please replace the paragraph on page 8, line 20, with the following redlined paragraph:

The integrated cold plate 14 comprises a metal base plate 39, a direct copper bonded (DCB) substrate 40 which is attached to the metal base plate 39 by a solder layer 41. A cooling header 42 includesing a number of cooling structures such as fins 42a, one or more fluid channels 42b, and a fluid inlet 42c and a fluid outlet 42d for providing fluid connection flow to and from the fluid channels 42b, respectively.

Please replace the paragraph beginning on page 9, line 23, with the following redlined paragraph:

The DC bus 16 comprises a pair of L-shaped or vertical DC bus bars 34a, 36a. The upper legs of the L-shaped DC bus bars 34a, 36a are parallel and spaced from one another by the bus bar insulation 38. The lower legs of the L-shaped DC bus bars 34a, 36a are parallel with respect to the substrate 40 to permit wire bonding to appropriate portions of the substrate. For example, the negative DC bus bar 34a may be wire bonded to the emitter plating 43a of the low side, while the positive DC bus bar 36a may be wire bonded to the collector plating 44b of the high side. The emitters of the IGBTs 48 and anodes of the diodes 50 may be wire bonded to the respective emitter plating 43a, 43b. Wire bonding in combination with the rigid structure of the DC bus 16 and housing 12 may also eliminate the need for a hard potting compound typically used to provide rigidity to protect solder interfaces. For low cost, the copper layers 40a and 40c may be nickel finished or aluminum clad, although gold or palladium may be employed at the risk of incurring higher manufacturing costs.

Please replace the paragraph on page 10, line 8, with the following redlined paragraph:

Figure 4 shows another embodiment of the DC bus 16 for use in the power module 10, the DC bus 16 comprising a pair of generally planar DC bus bars 34b, 36b parallel and spaced from one another by a bus bar insulation 38. The DC bus bars 34b, 36b are

horizontal with respect to a substrate 40 (Figures 2A and 2B), with exposed portions to permit wire bonding to the various portions of the substrate 40.

Please replace the paragraph on page 13, line 16, with the following redlined paragraph:

In at least one described embodiment, the power module 10 comprises three half bridges combined into a single three-phase switching module, or single half bridge modules that may be linked together to form a three phase inverter. As would be understood by one of ordinary skill in the art, the same DC to AC conversion may be accomplished ~~with~~ using any number of half bridges, which correspond to a phase, and each switching pair may contain any number of switching devices. For simplicity and clarity, many of the examples herein use a common three phase/three switching pair configuration, although this should not be considered limiting.

Please replace the paragraph on page 15, line 14, with the following redlined paragraph:

Figure 8 shows a single power module 10 configured as an H-bridge rectifier. The H-bridge rectifier may be suitable, for example, for providing 900A at 1200V, sufficient for industrial applications and furnaces such as induction heating. Three of the AC phase terminals 28a, 28b, 30a are electrically coupled to one line of an AC power source 62, while the other AC phase terminals 30b, 32a, 32b are electrically coupled to the other line of the AC power source 62. The DC terminals 24, 26 are electrically coupled to respective poles of a DC load 64.

Please replace the paragraph on page 17, line 22, with the following redlined paragraph:

The external connector 70 (illustrated as separate DC+ and DC- connectors for clarity), electrically couples the DC bus bars 34, 36 of the first power module 10a to respective ones of the ~~of the~~ DC bus bars 34, 36 of the second module 10b. The external connector 70 further couples the DC bus bars 34, 36 to a DC power source DC+, DC-.

Please replace the paragraph on page 18, line 12, with the following redlined paragraph:

The external connector 70 (illustrated as separate DC+ and DC- connectors for clarity), electrically couples the DC bus bars 34, 36 of the first power module 10a to respective ones of the ~~of the~~ DC bus bars 34, 36 of the second module 10b. The external connector 70 further couples the DC bus bars 34, 36 to a DC power source DC+, DC-.

Please replace the paragraph on page 19, line 6, with the following redlined paragraph:

The external connector 70 (illustrated as separate DC+ and DC- connectors for clarity), electrically couples the DC bus bars 34, 36 of the first power module 10a to respective ones of the ~~of the~~ DC bus bars 34, 36 of the second module 10b.

Please replace the paragraph beginning on page 19, line 25, with the following redlined paragraph:

The external connector 70 (illustrated as separate DC+ and DC- connectors for clarity), electrically couples the DC bus bars 34, 36 of the first power module 10a to respective ones of the ~~of the~~ DC bus bars 34, 36 of the second module 10b. The external connector 70 further couples the DC bus bars 34, 36 to a DC power source DC+, DC-.